EXHIBIT 4

(Applause).

TIM COOK: Wow! Thank you! Thank you! Thank you! Thank you! Good morning! And welcome to WWDC 2019! (Applause).

It is so great to be with you here today in San Jose.

We are so inspired by the millions of incredible Apple Developers around the world.

Your dreams and your passion and dwed indication to fulfill those dreams comes across so clearly in the apps that you create.

Apps that enrich the lives of millions of people around the world.

You make the world a better place, and that is why we are here this morning.

So welcome to WWDC! (Applause).

WWDC is more vibrant than ever with attendees from more countries and more first-time attendees than ever.

In fact, for most of you in the audience this morning, this is your first WWDC.

So welcome! (Applause).

Apple makes the best products in the world.

Products that integrate world class hardware with world class software and a growing collection of world class services to deliver experiences unlike anyone else out there.

In March we held an event to talk about our services and introduce you to some brand new Apple services.

We launched Apple News+, which offers a beautifully designed experience for more than 300 popular magazines, digital publications and newspapers.

There is no service out there quite like this.

I love it.

And if you haven't tried it, I encourage you to do so.

(Applause).

We also announced Apple Arcade, the world's first game subscription service for mobile desktop and living room featuring over 100 new games some from of the most innovative game Developers in the world.

Apple Arcade will be available later this year.

And we introduced Apple Card which will completely reinvent the credit card experience.

Apple Card will be available this summer.

And we announced Apple TV+, which is a new home for the world's most creative storytellers.

Now, while the service doesn't launch until fall, we thought it would be really fun to share with you a sneak peek of one of our upcoming show from Ron Moore, the executive producer behind battle star Galactica and star trek with his new series Ron wanted to take us on a journey in which the space race was a little different than you might remember it.

And it has never ended.

So let's take a first look at For All Mankind.

(Applause).

I believe this this nation should commit itself to landing a man on the moon and returning him safely to the earth.

After thousands of years gazing up in the heavens and dreaming of this day, man is about to set foot on the moon.

Across the world people wait with baited breath.

Ladies and gentlemen, this is a live signal.

There he is! The shock across the nation at this event is just indescribable.

The Soviet cosmonaut has been the first to set foot on the moon.

I thought it was about being first.

It turns out the stakes are much bigger than that.

Get back to work.

We are still in this thing.

Change of plans, gentlemen.

There is water on the moon.

This race will be ours to fight for and to win.

We are not stopping there.

We need to accelerate the base.

You are going to be an astronaut candidate.

No, I'm going to be an astronaut.

We will go to Mars, Saturn, the stars, galaxy.

Drifting right.

Watch it! This is Houston, do you copy? This is not the end of the race.

We must keep our eyes to the future.

Three, two .

.

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(Applause).

TIM COOK: Wasn't that great? I've gotten an early look at the entire season, and I loved it, and I think you are going to too.

We can't wait to show you this series and our other original shows coming up this fall.

Now, Apple TV+ will be available on the Apple TV app which is across all of your screens including your Smart TVs.

And, of course, the best way to enjoy this content is with AppleTV 4K which offers an immersive cinematic experience delivering the

highest picture quality of any streaming device out there.

Apple TV is powered by tvOS, and tvOS is just one of the software platforms that we are here to talk about today.

So let's get going.

(Applause).

I'm excited to share with you this morning how we are going to make tvOS even more entertaining and more personal.

We completely redesigned the Home screen, making Apple TV come to life from the moment that you turn it on with full screen previews of the best TV shows and newly released movies.

Apple TV is designed to be used for the whole family, but we wanted to make it even more personal.

Today the Up Next list has a mix of shows for everyone in the home, but when you sit down to watch TV, you want to see the shows that you love.

So we are introducing multiuser support for tvOS.

(Applause).

Now everyone in the home gets their own Up Next list plus personalized recommendations for new shows and movies to enjoy.

Now, it's easy to switch between family members using the all new Control Center.

It works just like you would expect it to.

TV TvOS also delivers Apple Music with over 50 million songs with multiuse ir support,st, everybody in the home gets their own personalized music experience.

You are going to be able to see lyrics to your favorite songs in sync with the music.

This is really cool! (Applause).

This is the best music experience on television.

Now, Apple Arcade is also going to be look amazing on the AppleTV 4K this fall.

Playing great games like ocean horn 2, of course, is even better with great game controllers so we are extending support to two of the best and most popular game controllers available.

Xbox 1S.

Yes.

And Playstation Dualshock 4 (Applause).

I think there is a few Playstation fans out there.

Finally, let's talk about our beautiful screensavers.

We have already captured some of the most stunning locations around the globe and even some from outer space through our collaboration with the International Space Station.

This year, we are going under the sea.

Oh, it's awesome! (Applause).

We've partnered with BBC Natural History unit to shoot beautiful 4K HDR footage taking you to places that few people have ever experienced before.

So that's the new tvOS.

More personal and more entertaining than ever.

(Applause).

Now, let's talk about Apple Watch.

(Applause).

Yeah! Apple Watch is the number one Watch in the world.

It keeps you connected to the people and information you care about just by raising your wrist.

It tracks your workouts and motivates you to stay active throughout the day.

And with new features like fall detection, heart notifications and ACG, the Apple Watch has truly become an intelligent guardian for your health.

For so many of us, the Apple Watch has become an essential part of our daily life.

Today we are going to take another leap forward with the watchOS to bring new experiences to Apple Watch while enhancing the ones that you already love.

To tell you all about it, I would like to invite Kevin to the stage.

Kevin.

KEVIN LYNCH: Thank you, Tim.

Good morning! So excited to be here.

We're thrilled at how Watch is making such a difference in so many people's lives.

This is driving us to make Watch even more powerful and more personal for you.

Let's start with Watch faces.

Now, these are something you interact with most every day, and we have more Watch faces this year since the very first Apple Watch.

(Applause).

From simply beautiful to richly detailed, let's take a look at a few of these.

First, we have the gradient face which is smoothly animating with the time.

Then we have this large Numerals face showing the current hour in multiple languages and the very modern digital face showing you a great look in multiple colors and then the California dial, classic design for Watch face.

Many of the faces you can add more information to, such as adding rich complications here right on the California dial.

Then we have the solar face.

This visualizes the sun's 24-hour path around the dial and you can see it changing during the day or as you rotate the Digital Crown.

These are just beautiful! (Applause).

Now, across all of the Watch faces, we are introducing taptic chimes.

And when enabled on the hour, you will feel a silent taptic on your wrist and if sound is on, you will hear an audible chime like this.

Yes, that's a bird song! It's actually a ran bin cap -- Robin captured in Apple Park, I mean, it was recorded in Apple mark.

The Robins are okay.

Now, let's talk about apps, these are designed for quick interactions on Watch.

First, we are bringing more Apple apps to Watch.

The new audio books app to letet you listen to Apple Books and Voice Memos so you can easily record your thoughts.

(Applause).

And calculator.

(Applause).

And check this out.

It also includes the ability to do typtip tip calculations including the ability to split the bill with friends.

(Applause).

Now, we are also giving Developers great new tools and APIs to build great apps for Apple Watch.

And we are now making it possible to create apps that run independently on the Watch, no longer requiring an companion iPhone app.

(Applause).

And now you can get extended time to access sensor data and complete sessions like physical therapy with Kya or brushing your teeth with Colgate or medicating with Calm.

And watchOS 6 enables the streaming audio API so you can go with just your Watch and you can stream great content like Podcasts music, live sports games so with new developer tools and a new native UI framework we are enabling a whole new generation of apps for Watch.

Now, to make it easr for you to discover these apps, we are excited to bring the App Store to Apple Watch.

(Applause).

You can browse apps curated by our editorial team or find five rate apps like Head Space, Carrot Weather, Streaks, Nike Run Club.

You can search the full App Store using dictation or scribble or asking Siri.

And you can view product pages to see information like the app description, reviews, screenshots.

And finally, you can purchase and install an app directly on your Watch.

(Applause).

So discovering and using apps at Apple Watch is going to be ge get -- better than ever with these great tools.

We are adding new health and fitness capabilities.

To tell you about these, I would like to invite to the stage Dr.

Sumbul Desai our vp of health to the stage.

(Applause).

SUMBUL DESAI: Thanks Kevin.

Apple Watch is an amazing health and fitness partner and in watchOS 6 we are adding even more features to empower you to better manage your health starting with activity.

Being physically active is one of the most important things you can do for your health.

If it were a prescription, it would actually be one of the most prescribed medicines in the world.

The Activity app on Apple Watch already v motivates you to stay active.

But knowing how active you are over the long term is just as important.

It gives you al sense of your overall fitness.

So in watchOS 6, we are introducing Activity Trends.

(Applause).

For nine key metrics it will compare progress over the last 90 days with the last 365.

If the trends show that you are maintaining or improving, you will see an arrow pointing up, and that's great, keep doing what you are doing, but if you are trending downward, we will give you simple coaching to get you back on track.

You will see trends for familiar metrics like move, exercise and stand, but you will also see trends for some new metrics like your workout walking pace, flights of stairs climbed or even your cardio fitness level.

Activity Trends will provide you with a more complete picture of what you can do to stay active, and even more importantly give you the motivation you need for long-term tuck says.

success.

Now, let's talk about your hearing health.

Your hearing is a precious asset.

Think about the sounds that surround you every day.

Hearing a friend's laughter, listening to your favorite song, protecting your hearing is critical to living your everyday life and maintaining your independence as you age.

Since hearing loss is often so gradual, it's important to know when the sounds around you are loud enough to impact your hearing.

Like when you are in the middle of a construction zone, at a sporting event or playing your music really loud to drown out your singing voice.

I do that all of the time.

The new Noise app uses the microphone to detect decibel levels and can notify you if it's reached a level that could impact your hearing.

Because the Watch is always on your wrist, it's in a great position to monitor your environmental noise.

If you tap the Noise app you will get more detail and you can use the complication to check with the raise of a wrist.

It's an easy way to protect your hearing health, and, of course, this feature was designed with privacy in mind.

It only periodically samples and does not record or save any audio.

(Applause).

We think the Noise app is going to make a big impact.

Now, there is one more new feature in health and fitness, and all of the women out there, pay close attention because this one is for you.

Cycle Tracking.

(Applause).

Knowing more about your menstrual cycle gives you a window into your health from simply ensuring that you are prepared to understanding your personal patterns and regularities.

As a physician I know that understanding what's normal for you is critical in making informed decisions and can enrich conversations with your doctor.

So in watchOS 6 the Cycle Tracking app gives you a simple, discreet ways to visualize your cycle on your wrist.

You can log key aspects of your period and per felt club Tim Toms and you can be notified when it's about to begin.

You can choose to receive a fertile window prediction so you are better informed.

This feature is available on Apple Watch and because we wanted to make this available to hundreds of millions of women around the world, Cycle Tracking is also available without a Watch in the Health app and iOS, yes, for everybody to use.

(Applause).

You can use it on your iPhone to do all of those same functions that can be done on Watch.

We are so excited to bring more focus to this incredibly important aspect of women's health.

Now, back to Kevin.

(Applause).

KEVIN LYNCH: Thank you Sumbul.

So the Health app is the best way to see all of your health data in one place, and we have r redesigned it to be more personal and meaningful to you.

In the new summary view you can see health notifications, your f favorites, as well as automatically generated highlights so you can see your health data over time.

For example, if you are more active than you usually are, how consistently you may have been mindful or how your heart rate recovered after a workout.

Is the new Mel Health app will bring you more powerful perspective on your health.

All of this health data is securely stored in your iPhone or encrypted in iCloud, and since there is nothing more private than your health information, you can decide if you want to share data with selected apps, if you would â– like to share anything at all.

Those are some of the great new features coming in watchOS 6.

So give you a look at some of this running live, please welcome to the stage watchOS program lead, Haley Allen.

(Applause).

HALEY ALLEN: Thanks so much, Kevin.

I have been loving watchOS 6 and I'm super excited to have the opportunity to show it to you today.

This is the new modular compact face and now I can have a large info graph complication alongside a beautiful dial.

And there is room in the corner for a couple of my five rate rich complications like these new ones wind and rain.

Let's tap customize and check out some of the options.

This is the new Noise complication which tells me how old it is in here.

It's pretty quiet.

Let's make some noise and see how this works.

(Applause).

Amazing! Thank you.

That's great.

The next face I want to show you is one of our most popular faces and this year we have made it even cooler because you can customize it to our all new monochrome style.

I love the simplicity of this two tone look.

In the middle is the Audio Books complication and I can tap it and reseem where I left off.

The controls are great showing me exactly what I need to see for that app.

In Audio Books I can tap at the bottom and find the chapter I want to listen to again.

It's never been easier to listen to great books on the go.

The last face I want to show you is the gradient face.

Kevin showed you how beautiful it looks full screen and I can customize it to add all of my favorite rich complications.

I'm constantly multitasking with a busy job and a son at home sometimes I only have a moment to capture a quick thought.

Let me tap on the Voice Memos complication in the bottom right corner and do that now.

Remind Marcus that just because you are almost seven does not mean you get to, quote, veto your bedtime.

Okay.

Now, I'm super excited to give you the first look at the all new App Store.

With curated collections and apps it's super easy to discover and download great apps for the Watch.

Let's check out Chineasy, I can tap here to see ratings and screenshots.

And I can download it directly from my Watch.

It's super convenient.

Let me show you an app I have already downloaded the MLB app, with the new audio streaming APIs in watchOS 6 I can listen into any live game no matter where I am.

They aren't actually playing right now, but let me tap here and give you a preview of how this works.

Two, one, pitch coming, a swing and high drive to right field.

Going back to the track it's got a shot.

Right at the wall.

It is gone! Yes, tnt that cool -- isn't that cool? Come on.

(Applause).

Thanks so much.

Those are just a few highlights in watchOS 6, I think you are going to love it.

Back to you, Kevin.

(Applause).

KEVIN LYNCH: Thank you, that was really cool.

Now, there is so much more to watchOS 6 like recognizing songs with Shazam and automatic software updates right on your Watch.

Now, lastly, we know how personalized you like to make Watch from the Watch faces to the physical bands, and we are introducing today some new summer colors and annal new pride edition Watch band.

(Applause).

It matches perfectly with the new pride Watch face on your Watch.

So watchOS 6 is a large step forward for Watch, and it's really an honor for the team to be crafting something so personal to all of you.

Thank you.

Back to Tim.

(Applause).

TIM COOK: Thank you, Kevin.

All of these great new features will make the Apple Watch an even more indispensable part of your daily life.

Now, let's talk about iOS, the world's most powerful mobile Operating System.

 (Applause).

 Last year we delivered iOS 12, which is full of amazing features from dynamic new AR experiences and Memoji to screen time and faster performance, and once again, iOS has the highest customer satisfaction in the industry.

 With an incredible 97%.

 This is unbelievable! (Applause).

 And as always our adoption rate is industry-leading as well.

 85% of iOS customers are on the latest release.

 And in fact, iOS 12 has been installed on more systems than any version of iOS ever.

 Now, that's in stark contrast to the latest offering from those other guys which was released before iOS 12, they only have 10% adoption.

 (Applause).

 Now, this high adoption rate is a huge benefit for both users and Developers.

 Now, to tell you about the next major release of iOS, I would like to hand it over to Craig.

 Craig.

 (Applause).

 CRAIG FEDERIGHI: Hello! Thank you.

 Thank you.

 Okay.

 I'd like to talk -- all right, we got a lot to talk about this morning.

 I'd like to talk about our next big release of iOS.

 Now, when it came to naming this release, our crack marketing team really surprised us this year by demonstrating their ability to count well into the double digits, yes, it's iOS 13.

 (Applause).

 Now, iOS 13 is a huge release packed with lots of capabilities, but we nose that nothing is more important to our iPhone users than performance, so this year, we worked top to bottom the system making everything faster that you do the most, things like unlocking with Face ID, now 30% faster.

 (Applause).

 Now, this one is cool.

 We have changed the way that we are packaging apps on the App Store, and when this rolls out in the fall with iOS 13, you will see that your downloads are now 50% smaller.

 And updates, 60% smaller.

But what's -- yes! (Applause).

But what's really incredible is the effect it has on app launch speed.

It's up to twice as fast in iOS 13.

(Applause).

Now, we were able to do this in a release packed with new features and there is one that I think is going to really resonate with some of you here and I would like to introduce it to you now.

Let's take a look.

(Music).

(Applause).

We are bringing Dark Mode to iOS.

(Applause).

I'd love to show it to you live now.

All right! Okay.

Let's take our first live look at iOS.

Now, here it is in its traditional light appearance this gorgeous new wallpaper, but now let's begin our dissent into darkness.

Look at that.

The gorgeous dark wallpaper and notifications look great.

Let's take a look at our Widgets.

They look just awesome! Let's take a look at some apps.

We will start with News.

Check it sought with a gorgeous dark appearance, so nice.

And your calendar, your daily events have never looked so awesome with this really beautiful palette and Notes.

Look at the refined texture, it's really fantastic.

Let's take a trip into Messages.

You see how your images, your emoji, they look fantastic.

And, of course, the keyboard, with an extra refined new dark appearance, and some new tricks because now when you type, you can swipe.

(Applause).

Just like that.

It's really great.

Let's take a look at photos.

Of course, it looks fantastic in Dark Mode.

Now, this is our Dark Mode project team at the project kickoff.

You see it was happy times.

They did slowly begin their dissent into darkness.

We take the details very seriously.

Let's take a look at our new share sheet.

It looks awesome in Dark Mode, but you notice in the middle sharing suggestions intelligently based on who you share with and who appears in the photos, you can share with just a tap.

It's so fast and easy.

And finally, music.

Your music looks great in Dark Mode.

It can go through some of my recent play back.

Of course, start playing some music here.

.

and now for the first time ever, time synced lyrics.

(Applause).

And that is a Quick Look at What's New with Dark Mode in iOS 13.

(Applause).

So great performance, intelligent sharing, the new quick path keyboard and Dark Mode, but, of course, there is much more to iOS 13, starting with apps.

Let's start with Safari, Mail, and Notes.

Now, Safari has new options to quickly change text sizing and has per-website preferences.

Mail gets desktop class desk formatting controls including support for rich fonts and Notes gets this beautiful new gallery view, support for shared folders, and much more.

But what we really -- where we really went deep is with Reminders, we have completely reinvented the app, rewriting it from the ground up to make it more intelligent, intuitive and powerful and easier than ever.

For instance, type what you want and Reminders will understand when and where to notify you, or you can use the new quick type bar, just tap and enter things like location or even attachments like Photos.

With tas,s -- tasks you can associate to-dos with a top level reminder.

Smart lists, they help you keep track of your most important items and if you tag a person in a reminder, well, next time you are in a messages conversation, you will automatically get a notification letting them know that now is time to talk.

It's really handy.

Next Maps.

Maps is with you everywhere you are from work, home, or even on the go with CarPlay.

And our team continues its obsession with building the best possible map.

Now, we have outfitted literally hundreds of planes and cars with custom sensors and lidar and driven over four million miles to rebuild our map from the ground up, and the results are really impressive.

Here is our old map, and here is the new map.

(Applause).

It's just great! Now, we expect to roll out this map across the entire U.

S.

by the end of this year and select other countries next year.

But we didn't stop there.

There is much more to maps, and to give you a Quick Look at what's new, I would like to invite meg Frost our director of product design to the stage for a quick demo.

Meg.

MEG FROST: All right.

Thank you.

I'm so happy to show you What's New in Apple Maps.

All right.

First, let's take a look at that new map.

As Craig said, we have been driving and flying all across the United States collecting land and aerial data to add significant new detail to the map.

So now roads and beaches, parks and buildings look great.

We have also added a couple of very useful new features to our recently designed launch screen, like favorites, where I can add the places I go every day for quick and easy access.

Now, I can just tap and go.

And with collections, this is where I can organize all of my favorites or I can make lists of favorites to share with friends, or I can finally organize that next big trip.

Let's check out my SF spots collection.

Now, I have been checking out China town.

You will notice in the upper right-hand corner, there is a new binoculars button.

When I tap that, I get a brand new look around window.

Yes, this is the right place to drop in, so I'm going to go full screen.

With look around, I get a gorgeous, HiDef in addition, 3D view.

It's an awesome way to explore.

But this is my favorite part, turn your phone, and hold on tight, smoothly move down the street.

(Applause).

Yep, I bet you haven't seen it look like that before.

I can tap on labels to learn more about new places.

Yes, I think I will check this one out later.

And those are just a few of the new features that we will be bringing to Apple Maps.

Thanks and back to you, Craig.

(Applause).

CRAIG FEDERIGHI: Thank you, Meg.

Now, we think Maps users are really going to love favorites, collections and look around, but there is much more to Maps, like junction view for China, or the ability when you are enroute to share an up-to-date ETA with friends and family with just a tap.

But what's most important is that Maps has been designed to be private and secure.

We always protect your identity and activity, and there is no need to flip a switch to ask Maps to start respecting your privacy.

Because at Apple, we believe privacicy is a fundamental human right and we Engineer it into everything we do.

This year we are doing even more.

I want to focus on three big areas starting with location.

Sharing your location with a third-party app can really enable some useful experiences, but we don't expect to have that privilege used to track us, and so this year we are building in even more protections.

Now, for the first time, you can share your location to an app just once, and then require it to ask you again next time it wants it.

(Applause).

And if you do choose to grant an app the ability to continually monitor your location in the background, we will give you reports so you will know what they are up to.

Now, some apps try to work around these protections by scanning for Bluetooth or WiFi signals to infer your location.

Well, we are shutting the door on that abuse as well.

(Applause).

Next, I want to turn to log in.

We have all seen buttons like this, asking us to use a social account log in to get a more personalized experience with an app.

Now, this can be convenient, but it also can come at the cost of your privacy.

Your personal information sometimes gets shared behind the scenes and these log ins can be used to track you.

We wanted to solve this and many Developers do too.

So now we have the solution.

It's called sign in with Apple.

(Applause).

Sign in with Apple is the fast, easy way to sign in without all of the tracking.

It's simple API allows the developer to put in a sign in with Apple button in their app.

You tap it and you are authenticated with face Face ID on your device, logged in without revealing any personal information.

(Applause).

Now, some apps may want your name, and maybe even an email to send you information when you are outside the app.

Now, we do allow them to request this information, but check this out, you can choose to share your actual email address or you can choose to hide it, and when you do, we will create a unique random address that forwards to your real address.

(Applause).

Yeah! A lot of love for random addresses here.

And that's good news because we give each app a unique random address.

This means you can disable any one of them at any time when you are tired of hearing from that app.

It's really great.

(Applause).

So, of course, this entire experience is meant to help you have control over your data.

Now, this is available across all of our platforms, and also on the Web.

Now, next I want to turn to HomeKit, our homes are such personal places, places where we deseven to feel safe and -- deserve to feel safe and secure so HomeKit has been designed to protect the privacy and security in your use of home accessory.

No accessory is more personal than security cameras that film in and around your home.

Now, unfortunately, most home cameras today send people's video up to the Cloud, so it can be analyzed to tell the difference between maybe a leaf blowing in the wind and someone at your door, but unfortunately, this risks your privacy.

We have a new way, it's called HomeKit Secure Video.

Now -- yes.

HomeKit Secure Video, in that case the video is analyzed in your home on your resident iPad, HomePod or Apple TV and then its encrypted and securely sent to iCloud where no one, not even Apple can see it.

(Applause).

Now, of course, you will be alerted if there is any activity, and you will be able to review the recordings.

Now, storage for ten days of clips will be included in your existing iCloud accounts and it wouldn't couldn't against your storage.

Netatmo, Logitech and Eufy will be the first to provide cameras with more to come.

In addition to cameras, HomeKit supports a wide variety of other accessories.

But many accessories don't just connect via HomeKit, they connect via the Internet and through your router.

Unfortunately, this can leave them open to attack.

And we want to make sure that this can't happen.

And so we are bringing HomeKit to routers.

Now, with HomeKit at the router, we will automatically fire wall off each of your accessories so even if one were to be compromised, it wouldn't be able to access your other devices or compromise your personal information.

The first HomeKit enabled routers will be coming from link sis, Eero and Internet service providers like Charter Spectrum.

Next up, Messages, now, we have all received messages like this, like who is this guy? Well, wouldn't it be better if you could see something like this, or maybe even this.

Well, now you can.

Because with iOS 13 you and the people you message with will be able to share your name and your photo, and even use Memoji or Animoji to create a photo of yourself.

Now, this information is only shared when you message with someone, so you are completely in control of who sees your name and picture.

Now, since we are all going to be creating a lot more Memoji, we wanted to make them even better at reflecting our own personal style, so we added a huge amount of new options for makeup, accessories and so much more I we would like to have some experts give you a Quick Look.

DESI PERKINS: I'm Desi Perkins.

PATRICK STARR: I'm Patrick Starr.

DESI PERKINS: We are beauty influencers.

PATRICK STARR: We are twoing to show you how to make a cute, flirty Memoji look.

DESI PERKINS: Using the McUp and accessories in iOS 13.

PATRICK STARR: Starting with eye shadow.

DESI PERKINS: This is my favorite eye shadow, and it comes in this cute Toolbar.

PATRICK STARR: Close your eyes, let me see.

DESI PERKINS: Pink,.

PATRICK STARR: Red, you have to go Dark Mode, darker, darker.

DESI PERKINS: Seriesings,.

PATRICK STARR: Nose ring, brow ring, ear ring.

DESI PERKINS: You can customize your teeth, braces, gap tooth, missing tooth.

PATRICK STARR: Mini grill.

DESI PERKINS: Ear rings, do you think this will be cool? I'm allergic to fake jewelry.

PATRICK STARR: Moving on, hair.

How about this? DESI PERKINS: We have to screenshot these.

What else? Hats.

PATRICK STARR: Hats! DESI PERKINS: And glasses.

PATRICK STARR: Cute, cute, cute, cute.

What do we have here? DESI PERKINS: Last but not least, Air Pods.

PATRICK STARR: Everyone, these are our finished looks.

DESI PERKINS: Thanks, Pat, for joining me.

PATRICK STARR: Don't forget to like and subscribe.

DESI PERKINS: Craig, I have a few tips for you.

Let's connect after the show! (Applause).

CRAIG FEDERIGHI: So I think that's given us all a great deal to think about.

(Laughter).

We are all going to have a lot of fun personalizing our own Memoji so we wanted to give you more ways to use them.

So we are introducing something new.

It's called Memoji stic stickers.

(Applause).

Now, instead of expressing yourself like this with emoji in your conversations, you can now do it like this.

We automatically create a sticker pack for you for each of your Memoji.

Now, of course, you can use them in messages but we have also incorporated them right alongside emoji in the system keyboard so you can use them in apps like Mail or favorite other apps like WeChat.

And we have made these usable not just in more apps but also on more devices because while actually animating a Memoji puppet with a face requires a device with a TrueDepth Camera system, Memoji stickers is now supported for all devices with an A9 chip or later.

Next -- (Applause).

Next, I want to turn to camera and photos where we have given you great new ways to capture, edit, and experience your photos.

Now, I'm going to start with Portrait Lighting where we put the power of the studio right in your pocket.

In iOS 13 we are taking Portrait Lighting to a new level.

And it starts with a brand new effect we call high key mono.

It looks just amazing.

Now, we are also extending Portrait Lighting so you can adjust the intensity of the Lighting Effect just like you could in a lighting studio by moving the lights closer or farther away from your subject i when you increase the iPad tensity of the light it's like moving the light closer.

This has the effect of smoothing kin brightening eyes and facial features or you can pull it back for a more refined look.

We adapt this effect uniquely to each style of Portrait Lighting.

Next I want to turn to photo editing.

We have a brand new experience so that you control every element of your photo.

You can see at a glance all of your settings, and with just a tap and a drag, you can make adjustments.

It applies across all of our existing effects, and many more that are new to iOS 13.

But we are -- yes.

(Applause).

But what's really cool is we are bringing all of this to video for the first time.

(Applause).

Now, for the first time, you can rotate a video.

How about it! (Applause).

But, of course, much more.

You can apply filters and all of these effects.

It's just awesome.

But, you know, our biggest change this year is in the way you can browse and experience your photos.

You know, we all have so many photos in our library, so much great stuff in there, but it's all often weighed down by pictures of receipts and white boards and screenshots.

So now we are using advanced Machine Learning to remove duplicates and clutter and let you focus on your best shots.

And we are taking these photos and we are intelligently organizing them to create a sort of diary of your life.

Using this, you will be amazed at how you discover the moments in your life that matter to you the most.

Now, we do all of this inside a brand new Photos tab.

And so to show it to you, I would like to bring up the leader of our photos app team Justin Titi to give you a life demo.

JUSTIN TITI: Thanks Craig.

I'm so excited to show you the new Photos app.

Here we are in all photos.

It's got a new home right here in the Photos tab.

We have also given you more control over how you view your photos.

You can pinch to zoom out and see a bumple of bunch of photos or zoom in.

As you can see, I take a ton of photos of my kids, trying to capture the perfect moment.

Oftentimes my best shots get lost in the sea of images.

That's what days is for.

I tap at the bottom, you can seedays is cliewtly beautiful.

The clutter of the similar photos is gone.

I can scroll and enjoy know.

So Photos uses intelligence to create stunning layouts of my photos.

Every day looks great.

And you can see videos like this Time-Lapse play automatically for me bringing my library back to life.

As do live photos help me re-live those really fun moments.

And a simple trip to the 235R78er's market makes me feel -- farmer's market makes me feel like a professional photographer.

Let's check out months, I just tap, and even moving between views is beautiful.

So months organizes the most meaningful events in my library by month.

So here is a trip I took to Tahoe.

My kids' last day of school, and my wife's birthday.

Now, this is a video we all take but forget to enjoy and now it's playing for me right here.

Really fun concert, and, of course, WWDC from last year, these labs were a blast! So that's months.

It makes it easy to browse the greatest hits of your library in one view.

Let's head over to Years.

So years gives me a high level overview of my library.

What makes years special is that it's dynamic based on my context.

So today is WWDC and photos knows I go to WWDC every year, so now it's showing me all of my WWDCs from the past.

Go try it out.

It's awesome! (Applause).

I can go all the way back to my first WWDC in 2011.

I was so excited to be at that Keynote.

Now, years can do so much more.

What if today was my daughter's birnl day, let me show -- birthday, let me show you what that would look like.

Years is totally transformed and it's all about my daughter.

As a proud dad, this brings me so much joy.

She's grown up so fast.

Her first bike, these fun times when every meal was a mess, and this is her first smile.

And this video just brings that moment right back to life for me.

I can just tap, and I can re-live that whole great day.

So that's the new photos app, we think you are going to love it.

Back to you, Craig.

(Applause).

CRAIG FEDERIGHI: Thank you, Justin.

We are so excited to have you try this out when you experience it with your own photos, it's a very meaningful experience.

So that's camera and Photos, and as you can see, there is so much to experience in iOS 13.

And now while much of our interaction with iPhone is through touch, we also experience iOS in so many other ways.

We use iOS when we are on the go with our Air Pods, when we gather around to listen to our favorite music on HomePod.

And when we are on the road with CarPlay.

And, of course, tying together all of these experiences is Siri.

So to take you through What's New with Air Pods, HomePod, CarPlay, and Siri, I would like to invite to the stage Stacey Lysik our Senior Director of OS program management to the stage.

Stacey.

STACEY LYSIK: Thanks Craig.

Let's get started with Air Pods where we have a couple of great new features coming to iOS 13.

First, when you are wearing AirPods Siri will now be able to read your incoming messages to you as soon as they arrive and you can instantly respond.

Let's take a quick peek and see how it works.

Amy said, can you meet for coffee at 9:00 a.

m.

Tell her I'll be there.

It's sent.

(Applause).

Just like that Siri helps you stay in the moment, whether the incoming notification comes from the messages app or any third party

messaging app using SiriKit.

(Applause).

Another great new feature is audio sharing.

We have all had a time where we wanted to share a movie or a song with a friend.

Now, you can with just a tap.

(Applause).

Like everything Air Pods, the experience is magical.

And when you get home, there is no better way to keep the music going than with HomePod and its incredible sound quality.

To make that transition seamless, we are bringing Handoff to HomePod.

(Applause).

Now, when you walk through the door, just bring your iPhone close to your HomePod to instantly hand off music, a Podcast or a phone call.

And you can take it with you when you leave the exact same way.

(Applause).

Today we are introducing Live Radio.

So you can ask Siri to play stations from iHeartRadio, tune in and radio.

com.

In fact, we have over 100,000 radio stations from all around the world.

(Applause).

Now, home pod can learn to recognize who in your family is talking and personalize the response.

(Applause).

Of course, this is great with Apple Music so now when you ask Siri to play you some music ited on your taste and play history and not anyone else's and the personalization extends beyond music to Messages, Reminders, notes and more.

So that's HomePod.

Next, let's shift gears to CarPlay.

CarPlay leads the industry in adoption with availability more than 90% of cars sold here in the U.

S.

and 75% of cars sold globally.

This year, we have our biggest update to CarPlay since the beginning.

It all starts with the CarPlay dashboard where you can now have music next to your maps and you still have room for Siri smart suggestions, like a garage door opener when you get close to home or a view of your next calendar event.

You can see your whole day in the new calendar app, music has been redesigned so your album art is front and center and beautiful.

Siri stays out of the way so you don't lose sight of what's on the display.

Siri has always been great for getting directions or asking for many music, and it now works with third-party apps like Pandora and Waze.

(Applause).

As you saw, Siri is with you across so much of what we do on iOS, and last year Siri became even more powerful with the introduction of Siri Shortcuts.

Shortcuts enable you to use your apps through Siri, and in the Shortcuts app you can create your own personalized multi-step Shortcut.

Now, on iOS 13, the app is built right in and it is more powerful than ever.

It is now the one place you access all of your Shortcuts, including ones you have added to Siri, and we make it easier to get started with your first multistep shortcut using a new feature called suggested automations which take your habits builts and personalize -- habits and personalize it to a template like heading home or going to the gym.

Interest gral across all -- integral across all of these experiences how Siri sounds.

When we first started we used short clips of audio from actor recordings, but sometimes when we put them together it didn't always sound as natural as we want the it to be.

So this year we have taken a huge step forward using cutting edge Machine Learning called Neural Text to Speech where for the first time ever, the voice you hear is entirely generated by software.

As a result, it's more, it has more natural cadence and better emphasis.

It's most noticeable when Siri is speaking longer or more complex sentences.

Let's have a listen together starting with iOS 12.

Absolute zero is the lowest limit thermodynamic temperature scale, a state at which the enthalpy and entropy of a cooled ideal gas reach minimum value taken as zero.

all right.

So that's okay.

But now let's try iOS 13 with Neural Text to Speech.

Absolute zero is the lowest limit thermodynamic temperature scale, a state at which the enthalpy and entropy of a cooled ideal gas reach minimum value taken as zero.

Way better.

Way better! (Applause).

That's Siri along with Air Pods, HomePod and CarPlay.

Thank you.

Back to you, Craig.

CRAIG FEDERIGHI: Thank you Stacey.

So that's our next big release of iOS, and there is so much we didn't have time to talk about, like the ability to deal with call spam by sending unknown callers directly to voice mail.

Yes.

(Applause).

Or low data mode or for our enterprise customers, the ability to Single sign-on to enterprise acts and have separate iCloud accounts for your personal and work lives.

(Applause).

So you may notice there has been one thing missing from the iOS 13 story, and that's iPad.

Yes.

(Applause).

Now, from the beginning, iPad has been built on the technical foundations of iOS, so, of course, it gets all of these great new features that we are bringing to iPhone.

But over the years, iPad has also evolved into something unique.

You know, with its giant canvas and powerful features like slide-over, split view, Drag and Drop and Apple Pencil, iPad delivers an experience is that is truly distinct.

We have big changes coming to iPad this year and the time has come to recognize the platform in a special way.

Let's take a look.

(Music).

(Applause).

CRAIG FEDERIGHI: That's right.

We are calling it iPad OS.

And I would like to give you a first look.

So let's take a look at iPad OS.

Swipe home and the first thing you notice is this tighter grid of icons, so you have more tools at your disposal right on your Home screen.

What I think is super cool is Watch what happens when I swipe over, I can now pin my Widgets right on my Home screen.

(Applause).

It's gorgeous.

You get a lot of information at a glance.

Let's turn to multitasking.

Let's start with slide-over, launch into Safari and slide over from the right-hand side of the screen.

You can see I have messages there now.

I can, of course, change the app I have in slide-over, I can pick up Reminders and drag it on over, now, I have Reminders in slide-over, so next time I slide out, of course, there is Reminders, but what if I want to get back to the last app? Could we make that super easy? The answer is yes.

I can drag from the bot tomorrow and they fan out just like that with just a tap I can switch apps.

I can even just slide along the bottom to move quickly between my apps in slide-over.

It's really great.

Now, next, I would like to talk about Split View.

Because now we are bringing multiwindow capabilities to apps on iPad.

For instance, I have a single note right here in notes, but what with I want to have two notes side by side.

Well, now, I can.

I can tap, drag, and now I have a split with two notes.

(Applause).

Now, I can use this across spaces as well, so here I have two notes, but here I have a Pages document.

What if I have notes I want to use while working on my Pages document.

I am going to slide on over, pick up another note, and I can just move back to my Pages space, and drop it over there.

Now, I have Pages right next to Notes.

Now that I have notes in all of these different spaces, well, you can guess how I can find them, right? I bring up the dock, tap on Notes and we have app exposé now on iPad, here are all of my notes spaces in one place.

Now, this just doesn't work for system apps.

It also worked for third peasht apps as well.

In addition to notes and Pages I can have two Microsoft Word documents side by side.

That's enterprisey right there.

And it works great for some of the work flows in apps like Mail.

So, for instance, let's say I want to reply to this message from Phil, well, I can just start typing to Phil and then I realize, you know, I would actually like to draw on many of my other contents of my inbox for this reply.

I can drag that compose window off to the side into Split View, even create a split so I can see my messages, I can tap through these other messages.

If I find an image I want to put to my message to Phil, just tap, drag it out just like that, and check this out, if there is a link I want to

preview, just tap and hold.

I get a preview of the Web pairnlg.

-- page, that looks perfect for Phil, drop it in here, better composing through multitasking on iPad.

And that's a Quick Look at the new Home screen and must Multitasking in iPad OS.

(Applause).

But there is a lot more.

Let's start with Files.

Now, browsing in Files, of course, you have icon view, list view, well, how about column view.

Great for digging through deep file hierarchies.

You get a great file preview right here and quick actions for things like rotating images, making PDFs, and great rich metadata right at the bottom.

Now, we are also improving the way you can share files.

For instance, in iCloud Drive we now support folder sharing.

(Applause).

And get this, we also have built-in support for SMB file sharing so you can share from your work PC, home PC, right in the files.

Now, there is one more.

That's right, you can now plug in a thumb drive.

(Applause).

So thumb drives, external disk drives and SD cards, all show up right in the files app, but now this one is really great too.

Sometimes when you are working with a camera, you would like to impofort directly -- imFort directly into an app like right room and now you can.

There is much, much more.

Prienl it's a huge year for Files this year, and it's also a huge year for Safari.

Safari is just the perfect device for browsing the Internet.

It's like holding the web in your hands and this year we are making Safari more capable than ever.

When you look at the Web today it's often split into two categories.

On the one hand you have the mobile Web designed for the small screen and mobile devices, and desktop sites that are designed for large screens like on your Mac and often websites will serve up the wrong thing for the iPad.

Well, no more.

Because we are bringing desktop class browsing to Safari on iPad.

(Applause).

Now, with this Safari does all of the heavy lifting, so instead of the mobile site, you will see the desktop site but it will be sized perfectly for the iPad display and have automatically optimized for touch input.

Now, this also works great for apps like Google dock Docks, square space and word press.

The desktop class experience doesn't stop there.

We are bringing a download manager to Safari.

(Applause).

30 new keyboard shortcuts, and much more.

Next I want to talk about fonts.

Now, we all know that fonts bring out the personality of a project, and this year we are giving you a new way to use custom fonts inside of your favorite apps.

You will be able to download them right from the App Store.

We are working with all of the major providers of fonts.

Next, we are taking a big leap forward in text editing, making it even faster with the power of Multi-Touch.

So navigating long documents, you can now grab the scroll indicator and jump anywhere in the document instantly.

(Applause).

Now, moving the cursor is easier than ever, just pick it up, and drag it where you want it to go.

And selecting text, just put your finger down and drag out a selection.

There is no need to double tap and no magnifying glass getting in your way.

And -- yeah.

And when you have a selection, check this out, you want to copy or cut, just a three finger pinch to copy, and a three finger spread to plop it right down.

This works across all sorts of apps.

(Applause).

And if you make a mistake, don't worry, just a three finger swip to undo.

No more shaking that iPad.

Finally, I would like to talk about Apple Pencil.

Apple Pencil has become an indispensable tool for iPad users.

It's perfect for marking documents, taking notes or doing illustration.

A critical part of the experience is the incredible low latency of Apple Pencil.

Our goal was to have it be indistinguishable for making marks on a physical piece of paper.

Apple Pencil already leads the industry with a record low 20 milliseconds latency, but we have been optimizing and advancing

prediction algorithms and today we are bringing that latency down to 9 milliseconds.

It's incredible.

(Applause).

Now, of course, an important part of your experience using your pencil is a great tool palette and a great set of tools so new in iPad OS, we have redesigned it and we are providing a pencilKit developer API so third-party apps can have the same great experience.

We have also made it a lot easier to markup anything on any app.

You can drag your pencil up from the corner of the screen and just like that you are you are in markup.

You can markup a screenshot or even an entire document.

This works just great throughout the system.

Now, to show you Pencil in action, I would like to invite up Toby Paterson.

Our Senior Director in charge of the iPad system experience to give you a demo.

Toby.

(Applause).

TOBY PATERSON: Thanks Craig.

Okay.

Well, let's jump into Notes here and take a look at the new text editing gestures.

It begins with a tap to place the cursor up there at the top of the screen, and then to move the cursor, we will just grab it with your finger, oops.

Grab it with your finger, put it exactly where you wanted.

Now, for typing there is I the standard keyboard, of course, but Watch what happens when I pinch with two fingers, it shrinks down to a compact layout and this is great for typing with one finger or your thumb while holding your iPad.

I know.

I do this a lot.

You can use quick path here.

Oops! Just like that.

Now, to select text, just hold your finger on a word, sorry.

Hold your finger on a word and just drag it out like that and our new gestures make text editing a breeze.

It's a three finger pinch, once to copy or twice in a row to cut and then a three finger drop gesture to paste it into place like that.

(Applause).

It's really easy.

Now, to undo your gestures, or to undo changes I want to reassure you can still shake your iPad if you want, but I do find the three

finger swipe to the left a little bit easier.

I want to note that these gestures are not limited to text editing only.

They will work in any application that supports copy paste, undo and redo.

Okay.

Let's switch now and talk about the pencil.

So you can see here at the tool palette with its beautiful new design the new tools and you can drag it around the screen like this.

You can pin it to any edge of the screen, you minimize it down in the bottom like that, and then with a tap or I crag, open it -- a drag, open it back up again.

Notes has been tailor made to work well with the pencil, but you can use this to markup any application on the iPad.

Let's switch over to Safari and I will show you how this works.

So Craig has put me in charge of the next software offsite and I want to share an idea with him.

Check this out.

Watch as I drag from the corner of the iPad with my pencil like this.

It takes you right into markup where you can see a screenshot of exactly what you were looking at.

But many apps can now support a new full page capture mode which you select with this button at the top.

Here you can see the entire document that you were looking at.

You can scroll through it or use the side bar on the right to quickly navigate and as you would expect you can mark it up with your pencil just like this.

I will pe bet we ha a a few Rush fans, I think Craig would make a -- just bring up the share sheet and send it off from here.

That's how you can easily markup anything on your iPad.

Back to you now, Craig.

Thank you.

(Applause).

CRAIG FEDERIGHI: Thank you Toby.

Those are some great improvements to Ap Apple Pencil and so much more for iPad OS.

There are a ton of features that take iPad OS to the next level.

Well, that's what I have for you now.

I'm going to hand it back to Tim.

Thank you so much! (Applause).

TIM COOK: Thank you Craig.

These are just blow away huge releases.

IPad OS built on the foundation of iOS takes the distinctive experience of iPad even further.

In a powerful new version of iOS, iOS 13, we can't wait for all of you to get your hands on these great new releases.

Now, let's turn to the Mac.

(Applause).

We love the Mac! And our customers do too.

In fact, the Mac is the number one in customer satisfaction by far in the industry.

People use their Macs to create amazing things, simply and powerfully.

We have the strongest Mac lineup we have ever had from the new MacBook Air all the way up to the power house iMac Pro.

And for Mac users looking to push the limits of performance, there is one more spot in our lineup that the team has been working really hard to fill.

(Applause).

Yes! To create a product that will take ma'am further than -- Mac further than its ever gone before, and I am so excited and thrilled to show it to you now.

(Applause).

(Music).

(Applause).

TIM COOK: This is the new MacPro and it's incredible.

(Applause).

It has a truly gorgeous design, and remarkable performance to match.

It is the most powerful Mac we have ever created.

And to tell you all about it, I would like to invite John Ternus to the stage.

John.

JOHN TERNUS: Thank you, Tim.

I am so excited to be able to tell you about this new MacPro.

Now, in designing this product we wanted to build an architecture that could meet incredible diversity of pro needs, a system that offers virtually unlimited possibilities for customization.

And key to this is a simple and elegant solution for accessing internal components.

Now, inside you will find a stainless steel frame that forms a strong internal structure for the system and it provides a foundation for modularity and flexibility.

The frame also incorporated stainless steel handles.

They feel great in your hand and make it easy to move the system around.

All of the internal modules mount to this frame, which means users have 360 degree access to easily configure components and every sub system has been optimized for performance.

Let's start with the processor.

Now, we have designed this new MacPro for our customers who need the ultimate in CPU performance for tasks like production rendering or playing back hundreds of virtual Instruments.

So we are using a brand new Intel Xeon Processor, and it has up to 28 cores.

(Applause).

And to get every last ounce o offer form ance out of this processor, we are giving it over 300 watts of power and massive heat sync for cooling so it can run fully unconstrained all of the time.

We also have an extremely high performance memory architecture.

Six channels in 12 slots enable an incredible 1.

5 tear ray bites of system -- TBs of system metry.

memory.

Now, let's talk about expansion.

Many of our pro customers need to add things like fiber channel or audio or SDI video to their systems we are bringing PCI expansion back to the Mac in a big way.

(Applause).

Because this new MacPro has eight internal PCI slots.

There are four double wide slots and three single wide slots, and there is one additional half length slot that we populate with an I/O card.

Now, the Ico card has two thunder bolt three ports, and there are also two more thunder bolt 3 ports conveniently located on the top of the system.

Feign lie, the Mac -- finally the MacPro has two built in ethernet ports.

One of the most critical areas of expansion is graphics.

Graphics performance is so important for tasks like animating 3D film assets or compositing 8K scenes or building complex 3D environments, but we wanted to go beyond the typical graphics card design so we invented something new.

It starts with an industry standard PCI connector so the slot maintains compatibility with standard cards.

We have added a second connector that allowed us to integrate thunder bolt through the system and provide a tremendous amount of extra power.

In fact, at 500 watts this module has the same power capacity as the entire previous generation MacPro.

And instead of adding its own dedicated fan, we have a huge heat sync that's quietly cooled by the MacPro thermal system.

We call this the MacPro expansion model.

And using this architecture we are going to offer multiple graphics option, starting with the Radeon Pro 580X.

A great all around graphics car.

For a big upgrade in graphics performance 9 MacPro can be configured with Radeon Pro Vega II.

Vega II delivers 14 teraflops of graphics computement.

An insane one TB per second of memory band willth.

With t t the increased head room, we can use two Vega II GP Us for double the teraflops, double the memory and double the memory bandwidth.

This is quite simply the world's most powerful gra graphics card.

(Applause).

Now, these two GPUs are connected by the inf Infinity Fabric Link which allows data transfer five times faster.

This is a big deal for apps that are optimized to take advantage of multiple GPUs.

And if all of this wasn't crazy enough, the MacPro can be configured with two of these modules.

(Applause).

Enabling up to 56 teraflops and 128 gigabytes of high bandwidth memory.

Now, we have also done something really special for video editing, one of the challenges in working with high quality cameras is the need to convert files into proxy for easier editing.

This is a time consuming and error prone process.

Being able to work directly with native formats would be a game changer in high end work flows so we have built a brand new card we call after burner and it turns your MacPro into a monster of a video editing machine.

After burner is a hardware accelerator card built with FPGA, and this is capable of processing 6 billion pixels per second.

(Applause).

So with this custom solution, we have achieved an unprecedented performance for the pro rez and pro rez RAW codecs.

But with after burner the new MacPro can play back an incredible three streams of 8K pro pr rez RAW.

Or 12 streams of 4K.

This is ground breaking performance, and it means we can finally say goodbye to proxy work flows.

Now, of course, all of this expiewt requires a mass -- commute requires a massive amount of power so we have given 1. 4 kilowatt power supply.

All of that power requires a capable coomg system so the MacPro has thee enormous fans and one blower that can generate up to 300 cubic feet per minute of air flow.

When it's under your desk it's an quiet as an iMac Pro.

The beautiful aluminum housing slides over the frame and latches into place.

It's unique three dimensional vents are both machined on both internal and external surfaces.

The resulting pat tern maximizes air flow while creating an extremely rigid structure and finally optional wheels make it easy to move the MacPro around your studio.

(Applause).

As you can see, utility and function define the design of the new MacPro, and while the specs we have been talking about are impressive, we have really been focused on delivering real world performance where it matters most.

To do that, we have been working closely with a number of pro app Developers.

Is this includes Adobe, Auto Desk, Serif and Blackmagic who are announcing support for the new MacProed to today.

Blackmagic is seeing per performance games.

They can tap into the CPU and GPUs to add effects and coloring in real time on native 8K content.

This is a work flow that has never been possible before the new MacPro.

Side effects, red, epic are also announcing support today.

Avid is taking advantage of the expansion capabilities to do something never before possible in a single work station.

They are enabling support for up to 6HDX cards.

Is this yields nor I/O, increased voices and two times the processing than any other system can achieve.

3D app Developers like Unity, Pixar, Foundry and Maxon are also announcing support.

Maxon is seeing 20% faster GPU render performance than on a windows work station maxed out with three of the latest video cards.

We are excited to announce that Maxon is bringing Redshift render engine to the Mac optimized for Metal.

And finally -- there you go.

The folks at oavme Otoy are hard at work building a version of Octane that will shine with the GPU performance of the MacPro.

We are thrilled by the excitement and commitment we are seeing from all of these great Developers.

And, of course, our own internal app teams are wreelly excited about the MacPro as well.

Now, I would like to bring up David Earl to give you a firsthand list look at what you can do in logic and final cut on the new MacPro.

David.

(Applause).

DAVID EARL: Thanks John.

I am thrilled to show you Logic Pro running on the new MacPro.

To get started we are going to open up this music score from a documentary that was shot in Kenya.

What you see is the logic project and every row is a track and every track represents an individual musical instrument performance.

Let's have a listen.

(Music).

.

okay.

So we wanted to have some fun and see just how far we could push this powerful new Mac.

What you are looking at here is a brand new version of logic and the theme of this release is all about performance.

So show performance I'm going to use these incredible sampler libraries.

I use the libraries so it sounds like a real orchestra when I create parts.

Let's add a 50 piece percussion ensemble to the score.

And you know what, how about 100 piece orchestra.

.

and how about another full orchestra just because, you know, we can.

.

now, many composers have to actually add a second and third computer to be able to run these massive orchestral libraries but the new MacPro with CPU power and ram can do this all in a single unit.

So, of course, I'm going to need a lot more to push this MacPro.

So let's add a ton more tracks.

So we have never seen this before in logic.

I have 300, 400, 500, we can now have a thousand audio tracks and a thousand software Instruments in logic.

(Applause).

That's four times the amount that we had in our previous version of lodge iks, and -- logic, and, of course, with this going on we have to check the CPU.

That's 56 threads across 28 cores with more tracks and plug-ins than we have ever seen before in logic.

The MacPro still has power to spare.

It's a monster for running logic.

Okay.

Now, let's take this music score over to Final Cut.

It's the Soundtrack for this beautiful documentary that was shot and edited in HDR it follows Amy Vitale on a recent assignment to Kenya.

Now, what we see here, we have never seen before in a Mac.

This is AK pro res RAW playing back at full resolution, what makes 8K amazing is that there is over 33 million pixels in every frame which means it looks great on a huge display like this but excludes enough resolution we can crop in and reframe for 4K projects and we can

add 8K effects in real time like this animated tidal and I think I'm going to go in and add advanced color correction and lens flair without stopping.

 I don't have to wait for it to render.

 So far we have been Watching a single stream of 8K pro res RAW but this has after burner installed which means we can push it further and we can have our single stream of 8K ProRes RAW, add another stream of 8K and third stream 8K ProRes RAW running simultaneously, that's 100 million pixels.

 This has never been seen.

 (Applause).

 Never been seen before on any video editing software on any computer.

 It's a power house and absolutely by far the most powerful Mac that's ever been created for professional film makers and musicians.

 Thank you.

 Back to you, John.

 (Applause).

 JOHN TERNUS: Thank you, David.

 That performance is nuts.

 So is the new MacPro.

 It is the most configurable, most expandable and by far the most powerful Mac we have ever made.

 But, of course, an extraordinary computer desevens and ex extraordinary display to tell you about that I would like to bring out Colleen Novielli from the marketing team.

 Colleen.

 (Applause).

 COLLEEN NOVIELLI: Thank you, John.

 Good morning.

 Displays are incredibly important to our pro customers because they play a vital role in creating their life's best work.

 Yet today if you look at their wish list, there is no single display that gives them every feature they have asked for, and this one feature, High Dynamic Range or HDR, it's incrissingly requested because it's yet to be delivered with pro level precision.

 What is HDR? HDR is a way to bring content to life by better reflecting what the eye can see in the real world.

 The eye sees the highlights, really dark blacks, vibrant color and all the details in between.

 Std more and more devices can play HDR content so more and more pros who create that content, they need a great HDR display.

 Is there there is one class of displays called reference monitors.

 But they are still missing these features, and they are incredibly expensive.

This one is $43,000.

So our goal, it was simple.

Make a display that expertly delivers every feature that pros have asked for.

Like the MacPro, the design is stunning and every element is built for pros.

And it's the most incredible panel we have ever made.

It's a 32 inch LCD display with over 20 million pixels, and with two 18 pixels fer inch it's a 6K Retina display.

(Applause).

It's the largest Retina display we have ever made.

It's over 40% larger than the iMac 5K display giving pros more room for their tools and content.

It has P3 and true 10 bit color and reference modes built in.

All expertly calibrated at the factory.

And we keep that color accurate at a super wide viewing angle by using a cutting edge polarizer for contrast that's 25 times better than a typical LCD display.

(Applause).

It's awesome! Now, the cover glass has our industry leading antireflective coating, but for challenging lighting conditions we have created an innovative matte option.

This coating, it scatters the light, but it also 5Ds unwanted haze and sparkle and lowers the contrast, so instead, we precisely etch the glass itself for a nano texture surface and this means quality, contrast along with flow reflectivity.

Next, we have delivered HDR at a level never seen before.

Now, for great HDR images you need extreme brightness right next to extreme contrast or deep blacks, and this is incredibly hard to achieve.

So we have designed a back lighting system like none other in the world.

First, a large array of blue LEDs generates extreme brightness.

We calibrate every single LED on every single display at the factory and then this feeds a massive algorithm and then this modulates each LED based on the content rapidly, then we use custom lenses and reflectors to actually shape and precisely control the light.

Now, a typical thermal system would make this impossible to achieve for more than a few minutes.

So we did something amazing.

We designed the rear lattice pattern to act as a heat sync and this doubles the surface area quietly extracting heat from each LED.

The results are incredible.

This display can maintain 1,000 nits of full screen brightness indefinitely.

(Applause).

Forever.

And 1600 nits peak.

And this is going to allow our pros to do things they have been dreaming about.

So, for example, video editors can now work with their HDR content exactly as i its intended and photographers can edit an amazing image like this for hours.

And that is not all.

Those images are going to have gorgeous, incredibly nuanced contrast, an incredible 1 million to one contrast ratio.

(Applause).

The images this display produces are truly stunning.

With these capabilities, we have taken this way beyond High Dynamic Range.

This is extreme dynamic range or XDR, and so we call this display the Pro Display XDR.

(Applause).

So now, we have delivered every feature on the pro wish list, but there is more.

Thunder bolt 3 will provide seamless one cable connectivity.

So with a 15 inch MacBook Pro you can have a stunning two display desktop set up or with the MacPro you can connect an incredible six displays with 120 million pixels.

Yes! (Applause).

Yeah! That's right! Now, there is one more feature that does not get much attention on other displays and that's the stand, which is as pro as the display itself.

First, it has an amazing counter balancing arm that makes the display feel virtually weightless.

It provides tilt and height adjustment and it maintains the display's angle as it's ra raised or lowered and it has rotation for Portrait Mode.

(Applause).

And this is perfect for retouching photos, designing a Web page or writing code.

Yeah! And it's removable.

It quickly detaches from the display to pack it up and take it on location.

And finally, for pros with unique mounting requirements, we have designed a base amount adapter that attaches in a matter of seconds.

So that's the new Pro Display XDR.

It's the only display in the industry that delivers every feature on a pro's wish list and more.

And now, all pros can use the same display across the work flow and have the same incredible XDR viewing experience with all of the features they need to create their life's best work making this the world's best Pro Display.

And now back to you, John.

(Applause).

JOHN TERNUS: Thanks Colleen.

So that's the new MacPro and Pro Display XDR.

Ground breaking in every way, they deliver performance and capabilities that will forever change pro work flows.

Now, the new MacPro will start with an 8 core Xeon processor, and a 256 gigabyte SSD.

If you look at other systems configured with compbl components you will see they cost around $8,000.

The new MacPro will start at $5,999.

(Applause).

And it's going to be available this fall.

Now, we know a lot of customers use the MacPro really want to be able to rack mount them in edit bays and machine rooms.

To support this we are also going to have a version optimized for rack deployment.

(Applause).

As for the Pro Display XDR, well, the reference monitors we talked about can cause tens of thousands of dollars and still not match the feature set.

The Pro Display XDR will be $4,999 for the display itself.

And the nanotech version will be $5,999 the Visa adapter will be $199 and the pro stand So that is the new MacPro and Pro Display XDR.

Now, back to Tim.

TIM COOK: Thank you.

Thank you John, and thank you Colleen.

We can't wait to get the new MacPro and the Pro Display XDR into the hands of our pro users and see all the great things they are going to create with them.

Powering the Mac experience is macOS the most advanced desktop Operating System.

(Applause).

The latest release of macOS is Mojave with system wide Dark Mode and new features for both finder and desktop that were inspired by pro users but designed for everyone.

It's been a huge hit with Mac customers.

The next release of macOS brings more exciting new features to the Mac, and to tell you all about it, I'd like to invite Craig back to the stage.

Craig.

(Applause).

CRAIG FEDERIGHI: Great to be back with all of you again.

For our next major release of macOS we are moving out of the desert into the beautiful waters off the California coast, a place for sailing, diving and so much more.

It's macOS Catalina.

(Applause).

Now, Catalina includes cool new features, some really fresh new apps and some powerful technology for Developers.

Let's take a look.

We begin with iTunes.

Now, iTunes started completely focused, rip, mix, and burn songs on your Mac.

And then came the iTunes Music Store kicking off the digital music revolution.

And then it took on Podcasts, and it redefined radio.

And then video.

Introducing us to on-demand movies and ad-free TV, and if that weren't enough, it also handled all of your syncing making possible the first iPod and iPhones.

Well, now, customers love iTunes and everything it can do.

But if there is one thing we hear over and over, it's can iTunes do even more? I think it can.

Like how about calendar in iTunes.

I mean, you could have all of your appointments and your best tracks right in one app.

Could we take it further.

I think so.

How about Mail in iTunes? And maybe Safari in iTunes? And how are you going to switch between these apps, well, of course you will add a dock.

I think we've nailed it.

(Applause).

"Truth Be Told" our team had a better idea.

The future of Apple Music our iTunes at not one app but three, Apple Music, Apple Podcasts and Apple TV.

(Applause).

Let's start with Apple Music because Apple Music and Catalina is the best music app we have ever made with its singular focus on music, it's so simple, but it has all of the powerful music features you expect from iTunes all while being just blazingly fast.

It's the best place for Apple Music subscribers with personalized recommendations from a catalog of over 50 million tracks.

And for those of you that use iTunes to sync, we made that experience better as well.

Because now when you plug in your phone, this is what you see.

Nothing.

(Applause).

If you do want to sync, you can find it in the side bar in finder, all of your sync options are right there.

(Applause).

And next let's turn our attention to Podcast.

It brings a dedicated Podcast listening experience to the Mac and it features all of the great features you are used to in iOS, like listen now where you can see new episodes and keep track of your listening across all of your devices and it has a great new feature and it has to do with search.

Sometimes you hear about something on the radio maybe or something on the news and you think I want to hear more about that, but you are not sure what show it was on or even that it appeared in the title, well, now we use Machine Learning to index the contents of the spoken content of Podcasts so now you can search the content and find the Podcast with just a few clicks in the app.

It's great! (Applause).

And finally, the Apple TV app, your new home for TV and music on the Mac.

Now, you will love having access to Watch now, including all of your great channels like HBO and Showtime, and it has all of your purchased movies for iTunes as well, and they have never looked or sounded better because now on recent Macs we have support for 4K HDR play back on the Mac with HDR10 and Dolby Vision.

And Dolby Atmos play back as well so you will experience amazing spatial audio rendered right how of your MacBook's speakers.

That's Apple Music, Apple Podcasts and Apple TV, and now I want to turn to something new.

We call it side car.

Yes.

Now, Mac users love connecting their laptop to an external display so they can spread out their work, but often when they have to leave on the go, they have to leave that display behind.

Well, no longer, because now you can use your iPad as a second display for your Mac.

(Applause).

It's great.

You can spread out your work right across your iPad, but, of course, some pro users like using these dedicated tablets for precise input on their Mac.

Well, now with the iPad and Apple Pencil, you can do that too.

It works both wired and wirelessly so you can get comfortable, and it works across all of your favorite Mac Apps that support tablets.

Now, next I want to turn to accessibility.

Now, we believe technology is most powerful when everyone can use it.

So we Engineer a wide array of assistive technologies into our all of our products.

Now, for users with physical motor limitations, voice can be an extremely powerful way to operate a computer.

And this year we are proud to introduce voice control.

Now, voice control let's you control your Mac entirely with your voice, and not just that, we are also bringing it to iOS as well.

I would like to show you just how transformative this can be.

Wake up.

Voice control is a break through feature that gives you full control of your devices, with just your voice.

It's a whole new way to do everything you love Correct love.

16.

Open photos.

Control up, show numbers.

13.

Click share.

3.

Tim, next field.

Let's ride this one today.

Thumbs up emoji.

Click send.

Open Maps.

Show grid.

Long press it.

Open app switcher.

4.

Tap share.

Tap Tim.

Tap send.

Hey, good to see you.

Open music.

Turn up the volume.

.

(Applause).

CRAIG FEDERIGHI: So that's voice control.

Now, it leverages the latest Siri voice recognition technology to precisely understand what you are saying and all of those commands and your voice is processed locally on device so none of that audio goes to Apple.

Now, next, I want to turn to a new solution that helps you find your Mac should it ever be lost or stolen.

It's called find my.

Now, find my combines Find My IPhone with Find My Friends and it's now available on the Mac and iOS devices as well.

And it has a new twist, because it can now even locate Apple devices that are off line.

Now, this is particularly important for Macs because often your laptop is folded up in a bag, asleep, and no longer on the network.

Now, the way this works is really cool.

Let's say you have misplaced your MacBook.

So even when it's off line and sleeping it sends out a secure Bluetooth beacon that can be detected by other people's Apple devices nearby.

Now, they can relay your MacBook's location to the network and ultimately back to you so you can find it.

Now, what's amazing is that this whole interaction is end-to-end encrypted and anonymous.

It uses just tiny bits of data that piggyback on existing network traffic, so there is no need to worry about your battery life, your data usage, or your privacy.

Next, activation lock.

We are bringing activation lock to your Mac to make it far less attractive to thieves.

It's amazing on all Macs with a T2 security chip and it works just like on your iPhone and iPad.

So in the unfortunate event that your Mac ever is stolen, the thief will find it completely useless because they can't even install or boot it unless you reactivate it with your credentials.

Now, I want to turn to apps because there is much more to the App Storey in Catalina.

Now, you will find of course the beautiful new photo browsing experience in Photos.

Up dated start page in Safari.

The brand new gallery view in notes.

And a completely redesigned Reminders app, but also for the first time we're bringing Screen Time to the Mac.

Now, it has all of the same great features from iOS, so you and your family can understand the complete picture of your use across all of your devices and all of the limits are enforced across all of your devices.

We think this is going to be great for families.

Now, of course, Mac users love third-party apps and they love to have more on the platform.

We have been working on a new project that internally we call Project Catatast, and it's new technology that let's Developers quickly and efficiently create apps for the Mac based on their existing iPad apps.

Now, there are over a million iPad apps out there and we think some of them would be fantastic on the Mac, now, iPad Developers, of course, would also love to have a greater audience to sell their apps to.

And there are 100 million active Mac users out there waiting for them.

Now, if you are running Mojave you have already used Catalyst technology because we used it to build News, Stocks, Voice Memos, Home, that was just V1 and we have learned a lot since then.

We have spent the last year expanding the number of categories of apps the technology could support and we have tuned it up so it results in a much better Mac App.

We are pleased to announce that we are making cast lift available to -- Catalyst available in macOS Catalina.

(Applause).

Now, the experience starts right here in XCode just open up your existing iPad project, check the Mac check box.

And just like that you will get a huge head start because XCode automatically builds in all of the fundamental features like cursor controls, window controls and so forth, and that let's you focus on the finishing touches, maybe a translucent side bar, pull down menus or whatever features would make your app just great on the Mac.

Now, this means one Development Team for the first time can build a single app that can span all the way from iPhone to iPad to Mac.

Now, we have been working with a number of Developers previewing Catalyst technology, and we have already seen some great Mac Apps.

For instance, the great racing game Asphalt 9: Legends from Game Loft.

Here is what they had to say.

And Twitter excited to come back to the Mac with a native app And finally, we asked Atlassian, Developers of Jira cloud, leading project management solution for agile software development to give Catalyst a try.

To tell you more about it I would like to invite Rob senior iOS Engineer to the stage, R Rob, come on up.

ROB CHATFIELD: Thanks, Craig.

Jira has been on the web for years, and recently we have put a lot of effort into mobile.

Like our iOS app that offers quick and easy access to your projects on the go.

Many of you have asked us for a similar experience on the Mac.

Well, today, I am thrilled to announce that we have done just that.

We are impressed that we were able to get the Jira project up and running in just a few days and it's a huge project.

Now, our iOS devs are Mac Dev too.

One code base, one team.

Here is a preview.

The boards view looks amazing on the Mac display with plenty of room for multitasking, and the benefit of this being a native app is that its insanely fast.

We can switch between these views instantly, which is a level of performance you just don't get on the Web.

And this is one project.

So all of the work we did on iPad automatically translated to the Mac, like keyboard shortcuts, Spotlight, and Drag and Drop.

And it was easy to add those finishing touches that make it perfect for the desktop.

For example, we added our top tasks into the custom Toolbar.

All of this never would have happened without Project Catalyst.

We are super excited to be bringing the Jira app to Mac and can't wait for you to try it.

So look for Jira Cloud in the Mac App Store later this year.

Thank you very much! (Applause).

CRAIG FEDERIGHI: We are really excited about this technology and excited to see what apps you all bring to the Mac App Store this fall.

So that's macOS Catalina.

Sidecar, strong security improvements, great new system apps and Project Catalyst bringing a whole new way to bring new apps to the Mac.

You know, you have seen a lot today in terms of tools for pro users, and you know who our biggest group of pros is? Well, it's Developers, all of you.

And, you know, everything we do for Developers is focused on the goal of helping you create the greatest and most innovative apps and we do this by providing tools and technologies designed to give you a head start.

Well, this year we have a whole bunch to talk about, like Metal and Core ML, but we are going to cover that later in the conference.

Today I want to focus on just two areas.

AR and Swift.

And we will start with AR.

Today we have three really big announcements, starting with RealityKit.

Creating complex 3D environments can require deep knowledge of 3D modeling and mastery of sophisticated gaming engines like Unity and unreal, but what about the Developers who want to incorporate 3D and AR in their apps but they don't have that experience.

That's where RealityKit comes in.

It's built from the ground up for AR with photo realistic rendering, amazing effects like camera motion blur and noise, and it seamlessly integrated into ARKit and has a native Swift API.

How do you actually model 3D content? That's where Reality Composer comes in.

Reality come poser is a new app featuring Drag and Drop interface and a library of high quality objects and animations making it incredibly fast and easy to build an interactive environment.

It's integrated with XCode, but it's also available on iOS.

So you can edit, test, and tune your app right on the device where it will ultimately be delivered.

Of course, the foundation of AR on iOS is ARKit, and ARKit is a major update.

I want to focus on one area around the improvement in the way people are handled in AR scenes starting with people occlusion.

Now, this is insane.

What used to require painstaking compositing by hand can now be done in real time.

(Applause).

Now, by knowing where these people are in the scenes you can see we can layer virtual content in front and behind them, and check this out, Motion Capture.

Just point your camera at a person and we can track in real time the positions of their head, their torso and their limbs and feed it as an input into the AR experience.

(Applause).

Now, Developers are going to do amazing things with ARKit 3, and that brings us to Minecraft.

Minecraft is the best selling game of all time, and a great platform or creativity.

So to see how ARKit is enabling Minecraft to go to the next level, I'm happy to welcome to the stage Lydia Winters and Saxs Persson from Mojang.

(Applause).

LYDIA WINTERS: Thanks Craig.

Our amazing community inspires us to push boundaries and build unique experiences.

We are here today to show you our newest creation.

We have been dreaming about Minecraft in the real world, Minecraft in Augmented Reality.

We share a vision with Apple how AR can uniquely connect us to the world and today technology is ready for the vision.

We built something we think is pretty special.

LYDIA WINTERS: We are excited to demo GamePlay for the very first time right here on stage.

(Applause).

This is Minecraft Earth.

SAXS PERSSON: Let's start with the basics.

This is a real living, breathing Minecraft world right on your tabletop with red stone circuitry, fireworks, flowing water.

You can break anything, you can play with your mobs, and when I look at Lydia,ky see what tool she is olding and I can see her name,

and I can see anything she is building.

LYDIA WINTERS: I will put myself into the build.

There I am.

SAXS PERSSON: Nice.

Looks just like you.

Let's use Motion Capture and make your character wave.

Try one wave.

Try the double wave.

Cool.

LYDIA WINTERS: This looks amazing on the tabletop, but let's use the stage.

Here we go.

(Applause).

LYDIA WINTERS: Look, mom, I'm in m Minecraft!.

SAXS PERSSON: You fit right in with the new people occlusion feature like you can fit right into your Minecraft world.

That only works on iOS.

LYDIA WINTERS: It's like hide and seek.

SAXS PERSSON: This is a fully interest or active world even at this scale.

There are some interesting levers over here, I will press the one with the feathers on it.

SAXS PERSSON: Watch out for the chickens.

LYDIA WINTERS: Chickens.

SAXS PERSSON: I will put seeds in my hand.

They should come rushing over.

LYDIA WINTERS: So cute! Hey Saxs, there is another lever over here it has TNT on it, I'm definitely going to pull it.

SAXS PERSSON: Watch out.

LYDIA WINTERS: I'm right on the edge.

Skeletons.

SAXS PERSSON: Lydia I'm going to help you out with the skeletons.

LYDIA WINTERS: Thank you.

SAXS PERSSON: Uht-oh, chicken, sorry.

LYDIA WINTERS: Oh, know.

Skeletons only.

SAXS PERSSON: I'm trying.

All right.

That's a huge cave underneath you we can light up.

LYDIA WINTERS: It's hard to believe that there is nothing on the ground or around us on the stage.

It's incredibly immersive.

The fun, quirkiness and surprises of Minecraft are all around to discover.

Oh, no, Saxs, a creeper! (Applause).

LYDIA WINTERS: It's always a creeper.

Minecraft takes on its biggest dimension yet, earth.

Unleash your creativity, build with friends and turn the real world into your Playground.

SAXS PERSSON: Go to Minecraft dot net to learn more.

We can't wait to see what you do in Minecraft Earth.

Thanks, everyone.

SAXS PERSSON: Thank you! (Applause).

CRAIG FEDERIGHI: Isn't that great in now, just to be clear, no chickens were harmed on the stage at WWDC.

I know it was life like, but that was an illusion.

That's ARKit 3, RealityKit and Reality Composer.

It's a huge year for AR.

It's also an enormous year for Swift.

(Applause).

Now, platform programming language transitions they only come along every 20 to 30 years.

You k know, C and Objective-C those were created in the 70s and 80s and Swift was just launched five years ago and it's amazing how strong it's been going.

There are over 450,000 apps on the App Store using Swift, and Developers are loving it.

(Applause).

Yes.

Thank you all.

But, you know, a new language enables new paradigms and with it, new frameworks.

Now, Objective-C enabled AppKit and then UIKit improving developer productivity by an order of magnitude and igniting the app revolution.

Now, when we introduce Swift, the first step was to make sure Developers could access these great frameworks while taking advantage

of the languages, speed, and expressiveness, but, of course, the biggest gains were yet to come.

The true step function in development would only come when we engineered a new framework, built from the ground up to take advantage of everything that Swift had to offer.

Today we are announcing that new framework.

It's called SwiftUI.

(Applause).

Now, SwiftUI is built in Swift for Swift.

And it provides a new paradigm.

You specify UI with simple declarations.

It makes code really easy to write and really easy to understand.

It's designed to help you build better apps with way less code.

For instance, let's take an app like this, a simple list.

We have all written one of these.

It turns out if you want to write this with support for all of the modern features you might end up writing something like this in UIKit.

It's actually quite a bit of code.

Here is that same thing in SwiftUI.

That's it! (Applause).

Just a few lines of Swift code.

Yes.

Now, there is so much that SwiftUI gives you.

It frees you to focus on the functionality in your apps and we automatically do new things for you like when we add Dark Mode your app gets it automatically.

And the framework is only part of the story because in XCode there's a new interactive development experience, you can think Mr.

About it like Playgrounds cranked to 11 built for apps.

To show you SwiftUI in action, I would like to invite Josh Shaffer, the head of our iOS UI frameworks team to the stage to give you a live demo.

Josh.

(Applause).

JOSH SHAFFER: All right.

Thanks Craig.

Let me show you how easy it is to get started with SwiftUI.

On the canvas on the right you can see my simple hello world app.

And I can select the text on the canvas and when I do XCode highlights the code in the editor on the left.

Watch what happens when I edit it.

The preview updates immediately.

(Applause).

Now, to get started let's open our library of views.

We can see options and drag one out and drop it on the canvas.

As soon as I do, the code is added to the editor on the left.

With simple Drag and Drop, we can get real code created instantly, and built in inspectors let us adjust the layout of our views exactly like you would in an app like Keynote.

The inspectors are tailored for each type of view so you can see the kind of options that you have, and choose exactly the one that you want.

And I can use the exact same tools to edit the code directly too.

So with just one step, we can take this view we have been building and convert it into a scrollable list of views.

Now, a list requires content.

Thanks.

It's really incredible.

So a list requires content and for that we can bring in a model object I created earlier and start connecting it up to our views.

For the first pubc app written with SwiftUI we thought it would be fun to let our friends in product marketing to choose the name.

Here we have a list of themes but we need a place to display a release name.

For that we can drag in a custom component a created earlier and drop it at the top.

Now, even with this little amount of code, SwiftUI already provides default support for really common features like localization for right-to-left languages and, of course, iOS 13's new Dark Mode.

(Applause).

All right.

Now, let's make this interactive.

So that when we select a row in the table we will display a name for the theme.

We are ready to test it out, and with just a click, we go from designing our app to interacting with it, right in XCode.

Now, testing within XCode is incredible, but I want to try it on a device too, so with just one more click we can now install it on our phone and be ready to try it out there.

So let's try farms, or maybe food.

That's great, but what's really incredible about this is that we can start to edit it live right on the device.

So SwiftUI includes built in support for animated transitions.

Let's see options and pick a cool one for the top.

This time when we choose a name it will animate in.

So let's say deserts or maybe beaches.

That's better, but we all know that product marketing chooses these names randomly, so to get a feel that matches that reality, let's wrap our banner in a custom randomizer component I built earlier to help us pick a name and now we are ready to choose the next name for macOS.

That one is not great.

Let's try wurn one more.

Cute animals seems promising.

That one is perfect.

All right because SwiftUI includes built in support for integrating with other Apple frameworks I thought it would be fun to use RealityKit to view Flying Squirrel.

It looks like it's going to be amazing.

That's a Quick Look at building interfaces with SwiftUI and XCode previews.

You are going to love it.

(Applause).

CRAIG FEDERIGHI: What do you think? (Applause).

Now, I'm sure that many of you are really excited to adopt SwiftUI in your apps and the good news is you can do it starting with a single view all the way up to a whole application.

And this isn't just for building iOS apps.

For the first time ever, we now have a native framework for building Watch apps as well.

(Applause).

But not just that, SwiftUI is available across all of our platforms and it provides bindings to all of the native controls so you can customize experiences specifically for each all while using a common API.

It's incredibly powerful.

Now, that's just some of our big news for Developers this morning.

I want to thank you all for spending the time with me.

You are so awesome.

I will hand it back to Tim.

Thank you.

(Applause).

thank you Craig.

What an incredible morning! Have you enjoyed it? (Applause).

Today we moved all of our software platforms forward providing customers new ways to enrich their lives and powerful tools to Developers so they can continue to change the world.

All of the platforms will be available as a beta today.

(Applause).

And the public seed for macOS, iOS and iPad iOS will be available in July, and, of course, all of this great software will be available to users in the fall.

(Applause).

Now, you will also be able to get an early look at the new MacPro and the Pro Display XDR in our Pro Studio just across the street.

I encourage you to do that.

We have a huge week planned for you guys, with more than 100 sessions, more than 200 hands-on labs, and over a thousand Apple engineers that are here to help you.

So seek them out.

We can't wait to see what you guys are going to dream up and how you are going to continue to change the world.

Now, before I close this morning, I would like to thank everyone that worked so hard at Apple on all of the products that you saw this morning.

These guys have given up their nights and weekends from their families and so on, so forth, and many of these innovations are years in the making.

So thank you.

Let's give them a round of applause.

(Applause).

Yes.

Thank you all for coming, and sharing the time with us.

Have a great week! Thank you! (Applause).